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PERSONAL PROTECTIVE EQUIPMENT FOR EMPLOYEES GRAIN PROCESSING ENTERPRISES

Abstract

The article deals with pressing issues of providing employees of grain processing enterprises with personal protective equipment (PPE). The presence of hazardous and harmful production factors in such enterprises requires the employer to use these remedies as one of the methods of protection of workers in conditions where safety of work cannot be ensured by the design of equipment, the organization of the production process and the means of collective protection.

The authors of the article analysed the existing legal documents, according to which the employer is obliged to organize the acquisition, issuance and maintenance of individual funds in working order, which would protect the worker from the effects of industrial hazards, as well as pollution and adverse weather conditions.

The modern classification of industrial PPEs (depending on destination), which should be used in grain processing industries, is given.

The grounds, rules for providing and designing personal protective equipment are considered. The choice of the specific type of PPE for the grain processing industry should be made taking into account the safety requirements for the process or type of work.

The obligations of the employer to provide workers with personal protective equipment, including the procedure and rules for issuing, inspecting, replacing PPEs, with reference to applicable regulatory documents, are disclosed in detail. A list of duties of an employee to use personal protective equipment is also provided.

As a practical example, the distribution of PPE by main occupations of employees of grain processing enterprises in accordance with the "Minimum safety and health requirements for the use of personal protective equipment in the workplace by employees" is presented.

Key words: *grain processing industry, working conditions, organization of protection, dangerous and harmful factors, personal protective equipment.*

Introduction

Grain processing enterprises of Ukraine belong to high risk objects [1] with peculiar working conditions, that is, a set of dangerous and harmful factors that arise and exist in the labour process and in the production environment during the labour activity of employees.

Inspection of these facilities, regardless of ownership and capacity, for the existence of violations that may cause risks to the safety, health and integrity of objects from destruction during accidents is mandatory. The following bodies of state oversight of labour protection have the right to such inspections according to the law of Ukraine "On Labour Protection" (p.38) [2]:

- the central body of executive power on supervision (control) of labour protection (State Service of Ukraine for Labour) [3];

- the central body of the executive power on supervision (control) on observance and fulfilment of requirements of the legislation in the field of civil protection, fire and technogenic safety (State service of Ukraine of emergency situations) [4].

Almost all the regulations of the state inspection bodies contain the requirement to provide workers with personal protective equipment (PPE), first of all, overalls and shoes in accordance with industry standards [5]. Individual remedies are used in cases where the use of collective remedies is insufficient or absent.

According to the results of inspections of supervisory authorities, grain processing companies, mostly small in capacity, and in grain-growing farms, are often violated by Article 8 of the Law of Ukraine "On Occupational Safety" [2], according to which the employer must purchase, issue and retain these protections. Their replacement before (early wear) and after the expiration of the term are also entrusted to the employer. It is also the responsibility of the employer to reimburse employees if they have purchased personal protective equipment at their own expense.

Various personal protective equipment, namely respiratory protective equipment, overalls, special footwear, hand protection, head, face, eyes, hearing organs, fall protection equipment, etc. working conditions for work associated with pollution or adverse meteorological conditions, as well as those involved in one-off work (not provided for in an employment contract) in the aftermath of accidents or natural disasters.

"Labour protection rules for employees engaged in storage and processing of grain" (НІАОП 15.0-1.01-17) [6], contain references to providing employers with personal protective equipment for employees "other personal protective equipment", approved by the Order of the State Committee of Ukraine for Industrial Safety, Labour Protection and Mining Supervision No. 53 [24] of March 24, 2008, and "Technical Regulation of Per-



sonal Protective Equipment ”, approved by the Cabinet of Ministers of Ukraine Decree No. 761 of August 27, 2008 [8].

At present, the first document - "Regulations on the procedure for providing workers with special clothing, special footwear and other personal protective equipment" [7] - has expired on January 15, 2019.

The second document, the "Technical Regulation for Personal Protective Equipment" [8], is still in force, but will lose its effect on August 30, 2020. At the same time, a new version of this document will be adopted on August 30, 2020 [9]. The technical regulation contains requirements that are advanced to the level of safety of personal protective equipment, prescribes the procedure for assessing the compliance of personal protective equipment with safety requirements (declaration), rules for the marking of protective equipment. That is, the Technical Regulation is a normative act, which primarily concerns designers and manufacturers of personal protective equipment, but not consumers of such products - workers of grain processing enterprises.

Therefore, it is worth paying attention to the new regulation, which came into force on January 15, 2019, is

"Minimum safety and health requirements when using workplace PPE" [10]. This document sets out the minimum requirements for personal protective equipment for employees of economic entities of all forms of ownership and legal form during the labour process.

In order to harmonize national legislation on occupational safety with European legislation, minimum requirements have been developed on the basis of a European Union normative document - Council Directive 89/656 / EEC of 30 November 1989 on the minimum safety and health requirements for the use of personal protective equipment by employees place [11].

Personal protective equipment should be applied in cases where it is not possible to avoid or limit the risks to the health and life of workers by technical means of collective protection or rules, methods, measures in the organization of work.

Such protective equipment must only be used for its intended purpose and use the operating instructions. The means shall comply with the requirements of the Technical Regulation of personal protective equipment for safety and the standards of design and manufacture [8, 9], that is, such products should be purchased from manufacturers - economic entities, and not made by themselves.

Each such remedy should be used individually (personally). If, under certain circumstances, the PPE is used by several workers, then the employer must, in each case, apply the following measures: restore the suitability of the remedy (repair or replacement of components); ensure proper hygienic condition (disinfection, cleaning, dusting, washing, degassing, decontamination, etc.). This should be done to prevent health problems and the personal hygiene of workers.

The countdown of the use of personal protective equipment on the calendar (in days) begins from the moment they are actually received.

It is the duty of the employer not to allow employees to work without the necessary means, as well as

in cases where they are contaminated, defective, with expired service life.

It is the duty of the employee to inform the employer in a timely manner of any deficiencies in PPE when used for their intended purpose.

Personal protective equipment must be accompanied by instructions for use, as well as instructions for safety at work or when performing certain types of work.

If necessary at the enterprises, it is necessary to equip cameras for dusting of special clothes, dryers for special clothes, special footwear and installations for disinfection of degassing, decontamination and neutralization of special clothes, footwear and other personal protective equipment.

All operations on cleaning, washing, dusting, disinfection, degassing, decontamination, repair of personal protective equipment, inspection of their properties during operation and protection should be carried out by the employer in his spare time (on weekends, holidays) or during breaks between changes of employees. If this condition cannot be fulfilled, then the employer is obliged to provide the worker with several sets of personal protective equipment.

All warmed overalls are subject to mandatory dry cleaning, as well as overalls treated with protective impregnation, unless otherwise specified in their operating instructions. The employer must issue removable personal protective equipment if he or she is unable to arrange timely washing of the workwear or its dry cleaning.

In infectious diseases of the employee special clothing, special footwear and other protective equipment that he used, as well as the room in which they were stored, disinfected.

The minimum safety and health requirements for workplace personal protective equipment [10] include a list of work requiring appropriate personal protective equipment.

For grain processing industries these can be:

1. Head protection.

Protective helmets or helmets are used: construction work, work on outboard workers places (inside silos and bunkers), cargo moving works, installation of structures and equipment; work in boiler rooms, in pits, mines, tunnels; near elevators, hoists, cranes and conveyors; metalworking and blacksmithing; works near industrial tanks, machines and mechanisms, bunkers, pipelines, on silos; shunting works on railway tracks.

2. Foot protection.

Apply special safety shoes without piercing - work in boiler rooms, large tanks; works on arrangement of systems of heating and ventilation, assembly of metal structures; live work; repair and maintenance works; work on transportation and storage of products; shunting works on railways.

Special protective footwear with a pro-protection layer - construction of platforms and dismantling of frame structures; warehouse and warehouse works; work on the roofs of industrial and residential buildings.



Special safety shoes with heels and / or platform and with a break-insole - work on the roofs of industrial and residential objects; roof repair work.

3. Face and eye protection.

Goggles, face shields (screens) are used: welding, crushing or screening work; working with wrenches, another mechanized tool for fastening; work with an abrasive tool (cutting, sharpening, abrasion, grinding); work with acids and caustic solutions, with substances that prevent corrosion; work with aerosols (including room disinfection); work related to heat, intense light.

4. Respiratory protection - filtering and isolating means of protection (gas masks or respirators): work in tanks, confined spaces; work in mines, sewer pipes; spraying of paints and varnishes; work on the reception and accounting of petroleum products; work on the crushing of raw materials or with the use of finished dust-like materials; electric gas welding and metal cutting; work in biological laboratories, work with acids, electrolytes and caustic solvents;

5. Hearing protection in case of noise level exceeding 80 dB - headphones, ear pads - ear pads, noise protection helmets: working with pneumatic tools and perforators; operation and maintenance of pumping equipment.

6. Protection of the body and hands - special protective clothing (suits, bathrobes, aprons, belts, gloves, gloves, etc.): anti-corrosion work with acids, caustic and disinfectant solutions; work with oil and petroleum products; operation under electrical voltage; near heat sources; working with a vibrating tool; work in cold rooms.

Fire resistant protective clothing - work in explosive and fire-hazardous areas and welding work in spatially restricted places.

Leather aprons - for welding, forging.

Gloves and gloves - welding work, holding dust objects and other equipment (in case of danger of tightening gloves into the mechanism); work with acids and caustic solutions.

Polyvinylchloride covers that are worn over basic clothing and footwear for extra protection while working to eliminate the effects of emergencies when contaminated buildings, equipment and territories by radioactive and toxic substances.

Workwear for protection against bad weather, when working outdoors - in the air, in the rain or cold.

Reflective clothing in areas where workers are clearly to be seen (in hazardous work areas where transport, lifting mechanisms, etc.) are present.

7. Means of protection against falling from a height (protective suspension systems): works on scaffolding; installation work; work on high-rise structures, overhead power lines, in cockpit cabins; working at height using special means of insurance; conducting work in wells, mines, sewer systems.

8. Skin protection (dermatological): when applying cover materials (primer, paint, other coatings).

Grain processing plants also need additional personal protective equipment to be used in the following workplace hazards:

1. Dangers from physical factors:

- mechanical damage (falling or sliding on horizontal and inclined surfaces, falling from heights, bumps, contraction or compression of body parts, cuts, punctures, abrasion of skin, etc.);

- thermal injuries (thermal burns, frostbite and hypothermia of the body, overheating from sources with thermal radiation, the action of open fire during welding, in the furnace of the dryer);

- increased levels of general and / or local vibration, noise, infrasound, ultrasound, increased and / or reduced humidity and / or air velocity of the working area, increased value of electrical voltage and / or static electricity, insufficient illumination of the working area in the working area.

2. Dangers from chemical factors.

Damage respiratory tract from high dust and / or gas contamination of the working area with harmful substances (solid, liquid, aerosol, toxic, irritant, sensitizing, carcinogenic, mutagenic).

3. Dangers from biological factors.

Damage the body by harmful bacteria and viruses, mould, fungi, etc. and products of their vital activity.

4. Dangers of psychophysiological factors.

Static and / or dynamic physical overload, neuropsychiatric overload (mental, emotional, visual, monotonous work).

"Minimum safety and health requirements for personal protective equipment in the workplace" [10] provide sufficiently large and detailed but general information on worker protection. The document does not explicitly indicate what personal protective equipment a particular employee of the grain processing industry should have.

It is also striking that the drafters of the Occupational Safety and Health Regulations for employees engaged in grain storage and processing (НПАОП 15.0-1.01-17) [6] have overlooked НАПОП 15.0-3.02-98. Typical rules for the free issue of special clothing, special footwear and other personal protective equipment to employees of the elevator, flour, cereals and feed industries [12], which are currently in force.

Typical standards apply to the main activities of grain processing companies, namely: grain elevator, flour-milling, feed industry, enterprises and workshops for processing varietal and hybrid seeds of cereals and oilseeds, state inspection of the purchase and quality of agricultural products, state inspection. According to this document, the employees of the grain processing industry are given personal protective equipment according to the norms, taking into account the requirements of technological processes, types of activity and terms of wearing (use). Personal protective equipment (PPE) for em-

**Table 1 - Provision of PPE for employees of the main occupations of the grain processing industry**

Name of profession	Overalls, work shoes, other personal protective equipment
Grain storage, flour and flour production	
Worker flour mill production	Cotton suit, dustproof Cotton helmet, dustproof At packing and packing of the finished goods and waste, service-bathing and control of weighting devices additionally are issued sleeves. When servicing sieves on separators and dispensers, when cleaning the grain surface in a "wet" and "dry" way, a cotton jacket with warming is additionally issued. Respirator When cleaning the surface of the grain in a "wet" way, an apron of water-proof fabric and sleeves are additionally visible For the repair, maintenance of the equipment additional gloves are issued
Worker cereals production	Cotton suit, dustproof Cotton helmet, dustproof At packing and packing of the finished goods and waste, service-bathing and control of weighting devices additionally are issued sleeves. When servicing the dryers of cereals drying in belt conveyor dryers and steam dryers, when cleaning the grain surface in a "dry" way, a cotton jacket with a warming and a respirator is additionally issued. For the repair, maintenance of the equipment additional gloves are issued
Processing worker grain	Cotton suit, dustproof Cotton helmet, dustproof When burning fuel in the combustion chamber of the grain dryer, a cotton jacket with insulation is additionally issued When carrying out the work on unloading ash, slag from the boilers of the furnace and additionally issued leather boots, goggles, canvas gloves Combined gloves are additionally issued when repairing the equipment
Mechanical maintenance worker, worker in silos	Cotton suit, dustproof Cotton helmet, dustproof Cotton jacket with warming
Production of compound feeds	
Worker compound feed production	Cotton suit, dustproof Cotton helmet, dustproof At packing and packing of the finished goods and waste, service-bathing and control of weighting devices additionally are issued sleeves. When performing work in silos and silos, in winter servicing small-sized compound feed units on external work, a cotton jacket and trousers with warming are additionally issued. When servicing equipment for the production of molasses additionally issued apron of waterproof fabric Combined gloves are additionally issued when repairing the equipment
Master	When servicing small-sized compound feed units in winter, a cotton jacket and trousers with insulation are additionally provided on outdoor work
Worker in silos	Cotton suit, dustproof Cotton helmet, dustproof Leatherette boots Combined gloves Industrial respirator When working in the winter in an unheated room, a cotton jacket with insulation is additionally issued



continuation of the Table 1

Service worker mechanisms	Cotton suit, dustproof Cotton helmet, dustproof Leatherette boots When servicing small-sized compound feed units in winter, a cotton jacket and trousers with insulation are additionally provided on outdoor work
Common professions	
The loader on works on loading-unloading of grain, bran, waste and other bulk cargoes in cars and barges, on processing of grain in warehouses with mobile transport mechanisms	Cotton suit, dustproof Cotton helmet, dustproof Leatherette boots In the works of loading and unloading, in the processing of packaging cargo, combined gloves are additionally issued When working in winter in an unheated room, an extra cotton jacket with warming is issued.
Master (disinfectant), work on the control of pests of grain stocks (the use of potent poisonous substances, poison chemicals), work on packing, transportation, loading and unloading, storage of poison chemicals	Suit and helmet made of cotton, impregnated with acid protecting agents Underwear made of natural fabrics Rubber boots Apron with rubber coating Rubber gloves Combined gloves Industrial gas mask Industrial respirator Safety goggles Workers who carry out the work on decontamination, gas, degassing and cooling of the grain with active carbonation apparatus, in the winter during external work are additionally given a jacket and pants made of cotton with warming, artificial leather boots, cotton gloves.
Head of the laboratory, performing in the laboratory work on the development and testing of new means and methods of pest control of bread stocks	Cotton robe Apron with rubber coating Rubber gloves Industrial gas mask Industrial respirator
Laboratory engineer, laboratory technician, performing in the laboratory work on the development and testing of new tools and methods for combating pests of bread stocks	Cotton robe Apron with rubber coating Rubber gloves Industrial gas mask Industrial respirator
Worker in silos	Cotton suit, dustproof Cotton helmet, dustproof For work in silos and silos, it is additionally issued cotton jacket and pants with warming

ployees of the main occupations of grain processing enterprises is shown in Table 1.

Summarizing the above, it can be noted that today in Ukraine in the context of the spontaneous nature of the market of clothing, special footwear and other types of personal protective equipment, some managers of enterprises of the grain processing industry for economic reasons are trying to reduce the provision of their employees with these funds (or to buy cheaper) or less quality) or neglected at all.

The processes of harmonization of the Ukrainian legislation with the European legislation on this matter, which are aimed at improving the quality of PPEs, do not in any way exclude the existing regulations on the obligations of employers to provide their employees with personal protective equipment in order to avoid or minimize the impact of dangerous and damaging factors. These tools should become the business card of the enterprise, which testifies to the current level of the current culture of occupational safety in this production.



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ЗАСОБИ ІНДИВІДУАЛЬНОГО ЗАХИСТУ ДЛЯ ПРАЦІВНИКІВ ЗЕРНОПЕРЕРОБНИХ ПІДПРИЄМСТВ

Анотація

У статті висвітлюються актуальні питання забезпечення працівників зернопереробних підприємств засобами індивідуального захисту (ЗІЗ). Наявність небезпечних та шкідливих виробничих факторів на таких підприємствах вимагає від роботодавця застосовувати ці засоби як один із методів захисту працюючих в умовах, коли безпека праці не може бути забезпечена конструкцією обладнання, організацією виробничого процесу та засобами колективного захисту.

Авторами статті проведено аналіз існуючих на сьогодні нормативно-правових документів, згідно яких роботодавець зобов'язаний організувати придбання, видачу та утримання в працюючому стані індивідуальних засобів, які б захищали працівника від дії виробничих шкідливостей, а також від забруднень та несприятливих метеорологічних умов.

Наведено сучасну класифікацію промислових ЗІЗ (залежно від призначення), які повинні використовуватись на зернопереробних виробництвах.

Розглянуті підстави, правила забезпечення та оформлення засобів індивідуального захисту. Вибір конкретного типу ЗІЗ для працюючих зернопереробної галузі повинен здійснюватися з урахуванням вимог безпеки для даного процесу або виду робіт.

Докладно розкрито обов'язки роботодавця по забезпеченню працівників засобами індивідуального захисту, включаючи порядок та норми видачі, перевірки, заміни ЗІЗ, з посиланням на чинні нормативні документи. Представлено також перелік обов'язків працівника по використанню засобів індивідуального захисту.

В якості практичного прикладу наведено розподіл застосування ЗІЗ за основними професіями працівників підприємств зернопереробної галузі у відповідності до «Мінімальних вимог безпеки і охорони здоров'я при використанні працівниками засобів індивідуального захисту на робочому місці».

Ключові слова: зернопереробна промисловість, умови праці, організація захисту, небезпечні та шкідливі фактори, засоби індивідуального захисту.



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